

## **Auto-Mounted SquashFS for Charliecloud Containers**

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Charliecloud is a light-weight container workflow for high performance computing. The typical filesystem image formats for Charliecloud are SquashFS and tar archives. SquashFS is a compressed, read-only filesystem that unprivileged users can mount in user space with SquashFUSE. It is the preferred image format due its efficiency, file deduplication features, and faster distribution time. The current SquashFS workflow is complicated because there is no library the runtime can interact with at the program level; the user must manually mount and unmount the SquashFS.

To simplify the workflow, we converted the FUSE filesystem operations from the existing SquashFUSE executables to library functions. We reference the library functions in the Charliecloud container runtime source code to handle mounting, unmounting, and filesystem operations for the SquashFS image. To compare the performance of the two workflows, we measured the duration of the mount, execution, and unmount phases. Our experiment results show the run time of the new user-friendly SquashFS workflow is comparable to the old workflows. The new SquashFS Charliecloud workflow reduces user complexity at no cost in performance.